

WHAT IS CLAIMED IS:

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1. An exposure apparatus, comprising:
an illumination optical system for
illuminating an original with ultraviolet light;
5 a projection optical system for projecting a
pattern of the original onto a substrate to be
exposed; and
gas purging means for replacing an inside
space, where optical components of at least one of
10 said illumination optical system and said projection
optical system are placed, with a gas containing
substantially no water content.
2. An apparatus according to Claim 1, wherein
15 said gas purging means includes a sensor for detecting
the level of gas replacement and control means for
controlling gas purging on the basis of an output
signal of said sensor.
- 20 3. An apparatus according to Claim 2, wherein
said sensor comprises a hygrometer disposed in said
inside space.
- 25 4. An apparatus according to Claim 1, wherein
the gas containing substantially no water content
consists of one of N₂ gas, He gas and dry air.

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5. An apparatus according to Claim 1, further comprising passage means for mutually communicating spaces separated by said optical components, for gas purging.

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6. An exposure apparatus, comprising:
an illumination optical system for illuminating an original with ultraviolet light;
a projection optical system for projecting a pattern of the original onto a substrate to be exposed;

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gas purging means for replacing an inside space, where optical components of at least one of said illumination optical system and said projection optical system are placed, with a particular gas; and
passage means for mutually communicating spaces separated by said optical components, for gas purging.

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20 7. An apparatus according to Claim 6, wherein said particular gas consists of an inert gas.

8. An apparatus according to Claim 6, wherein said optical components include a lens, wherein said apparatus further comprises a support for supporting said lens, and wherein said passage means for gas purging comprises an aperture formed in said support.

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Sub a 9. An apparatus according to Claim 6, wherein
said optical components include a lens, and wherein
said passage means for gas purging comprises a notch
5 provided on said lens.

10. An apparatus according to Claim 6, wherein a
straight line connecting adjacent passage means
provided in one and the same casing for gas purging,
10 extends out of parallel to an optical axis of a lens
which is one of the optical components.

11. An apparatus according to Claim 1 or 6,
wherein a path is defined within the space for gas
15 flowing from a gas inlet to a gas outlet, for gas
purging.

12. An apparatus according to Claim 1 or 6,
further comprising a light source having one of a KrF
20 excimer laser, a ArF excimer laser and F₂ excimer
laser.

13. A device manufacturing method for
manufacturing a device by use of an exposure apparatus
25 as recited in any one of Claims 1 - 12.

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a5

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b2

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f2

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g1